# Appendix A

# Rocky Flats Plant Chronology

This page intentionally left blank

This appendix contains a chronology of major events that have occurred at the Rocky Flats Plant (RFP) since nuclear production operations began in 1952. The history of the RFP spans over 65 years, of which approximately 40 years were dedicated to production in support of the U.S. nuclear weapons program, approximately 10 years to cleanup and remedy implementation, and over 10 years to post-closure monitoring. This chronology provides a high-level overview of key dates in this long history and provides detail for events that occurred over the five-year period covered by this report. It is by no means all-inclusive.

## Rocky Flats Plant Chronology

| Date | Event |
|---|---|
| April 1952 | Operations begin at the RFP to produce a plutonium component for use in atomic weapons. |
| September 1957 | A fire in Building 771 causes extensive contamination to the building and release of some plutonium to the environment. |
| 1967 | Large-scale leaking of waste oil drums being stored on the 903 Pad occurs contaminating the soils with plutonium, machining lubricants, and chlorinated solvents. |
| May 1969 | A plutonium glovebox fire that started in Building 776 spread to several hundred connected gloveboxes in Building 776 and Building 777. This caused extensive damage and contamination to the buildings and release of some plutonium to the environment. |
| 1968–1970 | Some of the radiologically contaminated material is removed from the 903 Pad and Lip Area, some of the surrounding Lip Area is regraded, and much of the area is covered by an imported base coarse material. Contaminated soil becomes windborne and contaminates the area east of the 903 Pad. An asphalt cap is placed over the most contaminated area of the Pad. |
| September 1973 | A tritium release is discovered in a water sample collected from Woman Creek by the Colorado Department of Public Health and Environment (CDPHE). A U.S. Environmental Protection Agency (EPA) report indicates that 50 to 100 curies of tritium reached Great Western Reservoir, just east of the RFP. |
| September 1984 | Cleanup of a 0.25-mile strip of soil on the 903 Lip Area is conducted. |
| July 1986 | A Compliance Agreement is entered into between the U.S. Department of Energy (DOE), EPA, and CDPHE that defined roles and establishes milestones for major environmental operations and response actions at the RFP. These efforts identified over 2,000 waste generation points and 178 Solid Waste Management Units (SWMUs) and Resource Conservation and Recovery Act (RCRA)/Colorado Hazardous Waste Act (CHWA)-regulated closure sites. |
| June 1989 | Federal Bureau of Investigation and EPA agents carry out a search warrant to search for evidence of alleged criminal violations of RCRA and the Federal Water Pollution Control Act. |
| September 1989 | Rocky Flats is added to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL). |
| December 1989 | Nuclear production work at the RFP is halted to address environmental and safety concerns. |
| January 1990 | Construction of a system begins to remove chemical contaminants from groundwater at the Operable Unit (OU) 1 – 881 Hillside Area, a designated high-priority cleanup site at the RFP. The action followed EPA and CDPHE approval of an Interim Measure/Interim Remedial Action Plan for OU1. |
| January 1991 | An Interagency Agreement (IAG) between DOE, EPA, and CDPHE is signed; the IAG replaces the 1986 Compliance Agreement. The agreement outlines multiyear schedules for environmental restoration investigations and remediation. |
| 1994 | End of production mission for the RFP; facility mission changes to cleanup and closure. |
| November 1994 | A no action Corrective Action Decision/Record of Decision (CAD/ROD) is issued for OU16 (Low Priority Sites). This is the first OU to be officially closed out under the IAG. |
| October 1995 | No action CAD/RODs are issued for OU11 (West Spray Field) and OU15 (Inside Building Closures). |

| Date | Event |
|---|---|
| July 1996 | The Rocky Flats Closure Project begins and the Rocky Flats Cleanup Agreement (RFCA) is signed, which supersedes the 1991 IAG. RFCA establishes the accelerated action framework, describes the goals for cleanup and closure, and defines the regulatory approach for review and approval of work to ultimately delete the RFP from the NPL. All buildings and Individual Hazardous Substance Sites (IHSSs) are to be dispositioned through accelerated actions. OUs are reconfigured into the Industrial Area and Buffer Zone OUs. Several IAG OUs are retained because progress toward CAD/RODs for those OUs was expected. |
| March 1997 | A CAD/ROD for OU1 and 881 Hillside are issued, requiring soil excavation, treatment of contaminated groundwater, and institutional controls. |
| June 1997 | The CAD/ROD for OU3, Offsite Areas is approved; the remedy selected for OU3 is no action. |
| 1998 | Groundwater treatment operations at the Mound Site Plume Treatment System (MSPTS) commence. |
| 1999 | Groundwater treatment operations at the East Trenches Plume Treatment System (ETPTS) and Solar Ponds Plume Treatment System (SPPTS) commence. |
| September 2000 | A major modification of the OU1 CAD/ROD is issued, deleting the soil excavation requirement and providing criteria for ceasing groundwater treatment and continued monitoring based on further investigation results. |
| December 2001 | Rocky Flats National Wildlife Refuge Act signed. |
| October 2002 | The first use of solar energy to provide power at the former RFP. A system of solar panels and storage batteries is constructed to provide power to a pump used in the groundwater collection system at the SPPTS. |
| September 2002 | First FYR report is issued. Completion of this report was triggered by the completion date for the CAD/ROD for OU3. This review evaluated OU1, OU3, and several key accelerated actions at IHSSs, as well as the installed groundwater treatment systems for the Mound Site, East Trenches, and Solar Pond Plumes and the seep at the Present Landfill (PLF). |
| 2005 | Construction of the RCRA-compliant cover on the PLF is completed; groundwater treatment operations at the Present Landfill Treatment System (PLFTS) commence. Installation of a 2-foot cover and grading of the Original Landfill (OLF) is completed. |
| October 2005 | Physical completion of accelerated Closure Project at the former RFP. |
| June/July 2006 | The Remedial Investigation/Feasibility Study (RI/FS) report and Comprehensive Risk Assessment for the Central Operable Unit (COU) and the Peripheral OU (POU) are published. The RI/FS report documented conditions after completion of all RFCA accelerated actions, evaluated three remedial alternatives for the COU, and proposed no action for the POU. The Sitewide Proposed Plan is issued for public review and comment. |
| September 2006 | The CAD/ROD for the COU and the POU is approved. The remedy selected for the COU is institutional and physical controls and monitoring; the remedy selected for the POU is no action. |
| March 2007 | The Rocky Flats Legacy Management Agreement (RFLMA) is signed by DOE, EPA, and CDPHE. This agreement establishes the regulatory framework for implementing the remedy at the COU and ensuring it remains protective of human health and the environment. |
| May 2007 | The POU and OU3 are deleted from the NPL. This is considered a partial deletion of the former RFP because the COU is retained on the NPL. |
| June/July 2007 | EPA certifies completion of cleanup and closure of the former RFP in accordance with the Rocky Flats National Wildlife Refuge Act of 2001. DOE transfers jurisdiction and control of the majority of POU lands to the U.S. Department of Interior, U.S. Fish and Wildlife Service. |
| June 2007 | Elevated nitrate and uranium detected in SPPTS discharge gallery prompt RFLMA consultation (see CR 2007-02). |
| July 2007 | CDPHE approves a 3 phase work plan for the OLF to address slumping and erosion issues identified during routine inspections (see CR 2008-07). |
| September 2007 | Second FYR report is issued. |
| January 2008 | The PLF Monitoring & Maintenance (M&M) Plan, which is adopted by reference in RFLMA, is updated to incorporate changes in inspection frequencies, completion of certain monitoring requirements, and clarification of vegetation inspection schedules and completion criteria. |
| 2010 | RFLMA Attachment 2 is modified to revise several monitoring locations (see CR 2010-04). |

| Date | Event |
|---|---|
| January 2010 | Effective date of changes to the Colorado Water Quality Control Commission Regulation #38 redefining Segment 5 of Walnut Creek to be that portion of Walnut Creek between the western and eastern boundaries of the COU. Segment 4b was redefined as that portion of Walnut Creek between the eastern boundary of the COU and Indiana St. The Recreational Use Classification of N (no primary contact use) for Segment 5 was retained. |
| 2011 | A small-scale air stripper is installed at MSPTS. This spray-type air stripper is located in the effluent manhole and is designed to treat groundwater for VOCs following passive zero valent iron (ZVI) treatment in underground tanks. The air stripper is powered entirely by batteries, which are recharged using solar energy. |
| September 2011 | Operation of new surface water points of compliance (POCs) at Woman Creek (WOMPOC) and Walnut Creek (WALPOC) commence at the boundary of the COU. These POCs replaced former POCs at GS08, GS11, and GS31.<br><br>A CAD/ROD amendment for the COU is signed. The primary purpose of the amendment is to clarify the description of the institutional controls (ICs) pertaining to excavation, soil disturbance, and changes to engineered components. |
| November 2011 | DOE and CDPHE finalize the Environmental Covenant restricting use and access to the COU. The Covenant may be viewed on the DOE-LM website. |
| September 2012 | Third FYR report is issued. |
| 2012 | Minor modifications are made to RFLMA Attachment 2 (see CR 2012-03). |
| 2013 | A small-scale air stripper is installed at ETPTS. This spray-type air stripper is located in the influent manhole and is designed to treat groundwater for VOCs prior to passive ZVI treatment in underground tanks. The air stripper is powered entirely by batteries, which are recharged using solar energy. |
| September 2013 | The two surface water POCs at Indiana Street, GS01 and GS03, cease operation under RFLMA. This change reflects the deletion of the POU from the NPL and establishment as a National Wildlife Refuge and realignment of POCs to the COU boundary. Monitoring at GS01 and GS03 continued until 2015 under the AMP.<br><br>Record-setting precipitation and flooding (a 1% probability per year flood) on the Front Range. |
| October 2013 | Slumping at the OLF results in a reportable condition (see CR 2013-02). Minor slumping had also occurred in 2007 and 2010. |
| December 2013 | A reportable condition for uranium at WALPOC is documented and persists through May 2014 (see Section 6.1.3.1). |
| January 2015 | A commercial air-stripper is installed at ETPTS to eliminate the use of ZVI for treatment and begins operation. |
| May–September 2015 | Extended heavy precipitation over several months in spring cause significant cracking, slumping, and movement on northwestern and eastern sides of OLF. Immediate response actions include installing overland drain pipes and developing small drainage channels to conduct water off the cover (see CR 2015-03). Subsequent interim actions include regrading the affected areas and closing cracks (see CR 2015-06). |
| September 2015 | An extensive evaluation of water quality following the 2013 flood event is finalized. *Evaluation of Water Quality Variability for Uranium and Other Selected Parameters in Walnut Creek at the Rocky Flats Site* discusses changing geochemical conditions resulting in mobilization of uranium at the site. |
| 2016 | SPPTS conversion from organic media/ZVI to full-scale lagoon treatment for nitrate is completed. Evaluation of treatment technologies for uranium continues. |
| June 2016 | An Explanation of Significant Differences (ESD) is issued to document a significant change to the CAD/ROD approved in 2006. The change consists of the reconfiguration of the MSPTS, which involved the relocation of groundwater treatment from the MSPTS to the ETPTS. This eliminated the use of ZVI and reduced the number of groundwater treatment systems from 4 to 3. |
| September 2016 | The reconfiguration of the MSPTS is complete; combined groundwater from MSPTS and ETPTS is now treated for VOCs at the commercial air stripper at the ETPTS.<br><br>Wells/piezometers are installed upgradient of the OLF to allow for long-term monitoring of groundwater levels. |
| December 2016 | The ESSD reconstruction project begins. This project involved the reconstruction of an existing stormwater drainage feature designed to divert groundwater before it enters the area of the most significant slumping (see CR 2016-04). The project is completed in January 2017. |

| Date | Event |
|---|---|
| January 2017 | The *Original Landfill Path Forward* document is published. This document evaluates long-term solutions for reducing the instability of the slopes surrounding the OLF. Two key OLF technical evaluations are included as attachments to this document: *OLF Options Report* and *OLF Geotechnical Engineering Review.* |